查询NJM2146供应商

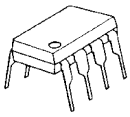


# VOLTAGE AND CURRENT CONTROL IC

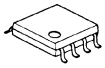
## ■ GENERAL DESCRIPTION

The NJM2146B is a voltage and current control IC which contains single-supply low offset voltage OP-AMP(2mV max.),low operating OP-AMP, and precision voltage reference. It is suitable for battery charger, second controller of switching regulator systems, and other battery systems.

## ■ PACKAGE OUTLINE



NJM2146BD



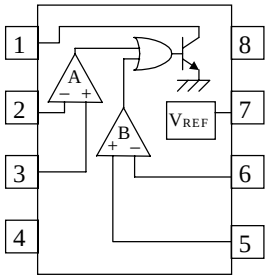
NJM2146BM

NJM2146BR

## ■ FEATURES

- ●Operating Voltage (2.5V ~ 18V)
- ●Internal Precision Voltage Reference (1.5V±1%)
- ●PC Terminal Current (60mA max.)
- ●Operating Current (3mA max.)
- ●Bipolar Technology
- ●Package Outline DIP8,DMP8,VSP8

## ■ PIN CONFIGURATION




PIN FUNCTION

1. PC
2. A –INPUT
3. A +INPUT
4. GND
5. B +INPUT
6. B –INPUT
7. $V_{REF}$
8. $V^+$

## ■ ABSOLUTE MAXIMUM RAINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+$ | 20 | V |
| Differential Input Voltage | $V_{ID}$ | (Ach) 20<br>(Bch) ±4 | V |
| Power Dissipation | $P_D$ | (DIP8) 500<br>(DMP8) 300<br>(VSP8) 320 | mW |
| PC Terminal Current | $I_{PC}$ | 60 | mA |
| Operating Temperature Range | Topr | –40 ~ 85 | °C |
| Storage Temperature Range | Tstg | –50 ~ 150 | °C |

(note)When the supply voltage is less than 20V, the absolute maximum input voltage is equal to the supply voltage

## ■ RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Operating Voltage | Vopr | 2.5 ~ 18 | V |

■ ELECTRICAL CHARACTERISTICS ( $V^+$=5V, Ta=25°C)

| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | $I_{PC}$=off | – | 1 | 3 | mA |
| Leakage Current | $I_{PCLEAK}$ | $V^+$=$V_{PC}$=20V | – | – | 100 | μA |
| Saturation Voltage | $V_{PC(SAT)}$ | $I_{PC}$=50mA | – | 0.5 | 0.7 | V |
| Reference Voltage | $V_{REF}$ | $I_{REF}$=0mA | 1485 | 1500 | 1515 | mV |
| Reference Voltage Load Regulation | $\Delta V_{REF}/\Delta I_{REF}$ | $I_{REF}$=0 ~ 5mA | – | – | 30 | mV |

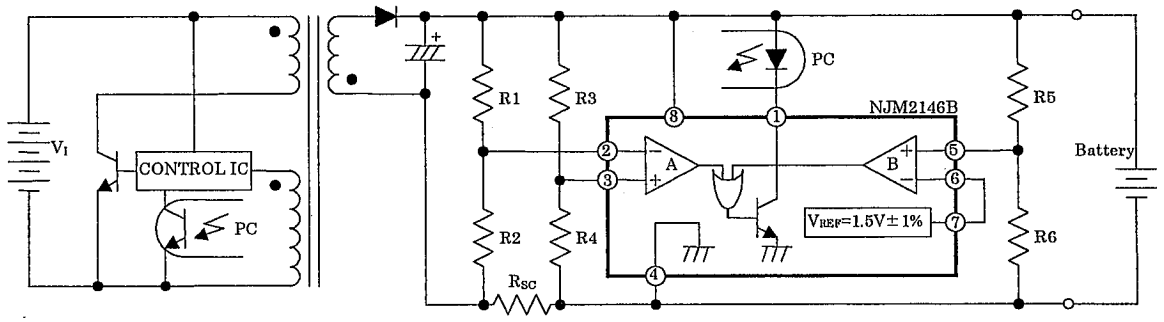
[Ach]

| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Input Offset Voltage | $V_{IO}$ | | – | 0.5 | 2 | mV |
| Input Offset Current | $I_{IO}$ | | – | 5 | 50 | nA |
| Input Bias Current | $I_B$ | | – | 80 | 250 | nA |
| Large Signal Voltage Gain | $A_V$ | | – | 80 | – | dB |
| Input Common Mode Voltage Range | $V_{ICM}$ | | 0 to 3 | – | – | V |
| Common Mode Rejection Ratio | CMR | | – | 90 | – | dB |
| Supply Voltage Rejection Ratio | SVR | | – | 80 | – | dB |
| Slew Rate | SR | | – | 0.8 | – | V/μs |
| Gain Bandwidth Product | GB | f=10kHz | – | 2 | – | MHz |

[Bch]

| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Input Offset Voltage | $V_{IO}$ | | – | 1 | 6 | mV |
| Input Offset Current | $I_{IO}$ | | – | 10 | 50 | nA |
| Input Bias Current | $I_B$ | | – | 100 | 300 | nA |
| Large Signal Voltage Gain | $A_V$ | | – | 80 | – | dB |
| Input Common Mode Voltage Range | $V_{ICM}$ | | 1.0 to 4.4 | – | – | V |
| Common Mode Rejection Ratio | CMR | | – | 90 | – | dB |
| Supply Voltage Rejection Ratio | SVR | | – | 80 | – | dB |
| Slew Rate | SR | $A_V$=1, $V_{IN}$=2.5V±1V | – | 0.5 | – | V/μs |
| Gain Bandwidth Product | GB | f=10kHz | – | 1 | – | MHz |

■ TYPICAL APPLICATION

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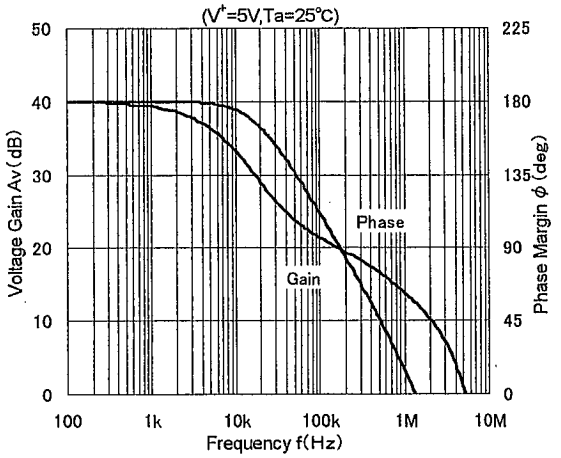
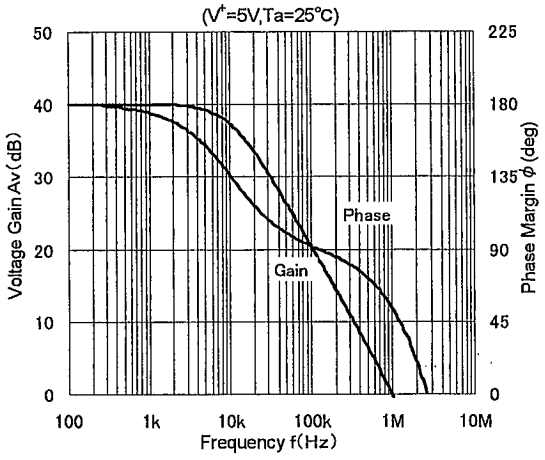
## ■ TYPICAL CHARACTERISTICS

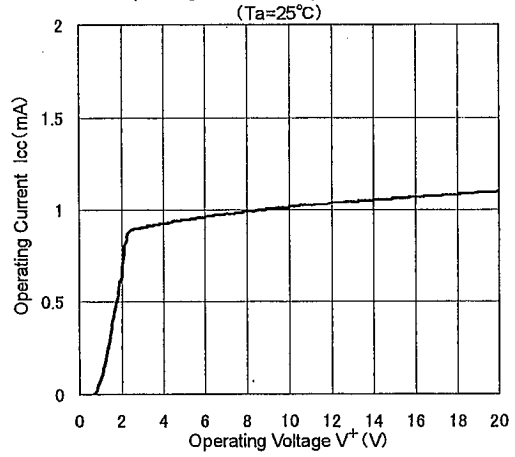
Ach Voltage Gain, Phase Margin vs. Frequency
($V^+$=5V,Ta=25°C)



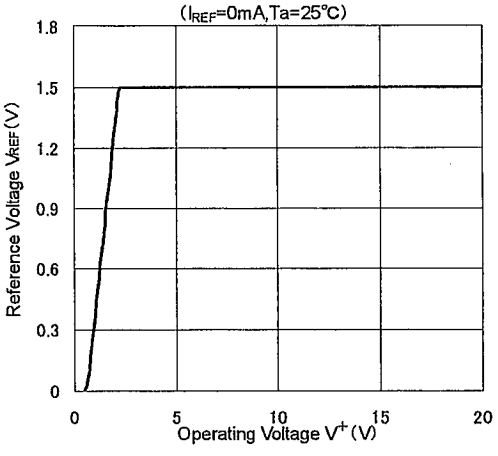

Bch Voltage Gain, Phase Margin vs. Frequency
($V^+$=5V,Ta=25°C)



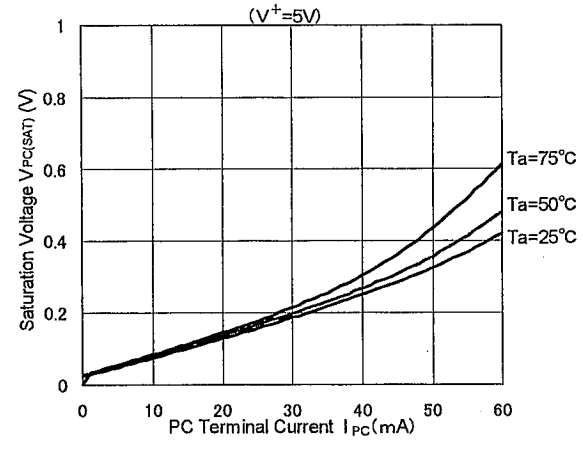

Operating Current vs. Operating Voltage
(Ta=25°C)



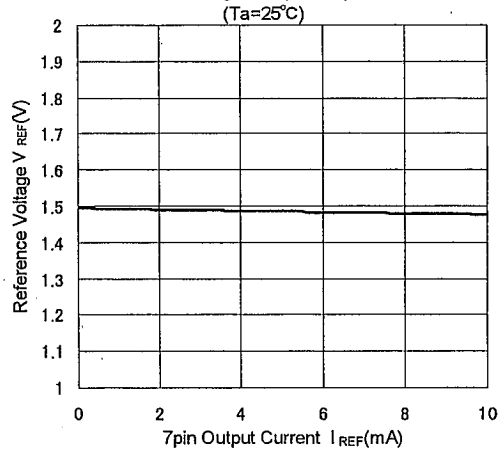

Reference Voltage vs. Operating Voltage
($I_{REF}$=0mA,Ta=25°C)




Saturation Voltage vs. PC Terminal Current
($V^+$=5V)




Reference Voltage vs. 7pin Output Current
(Ta=25°C)

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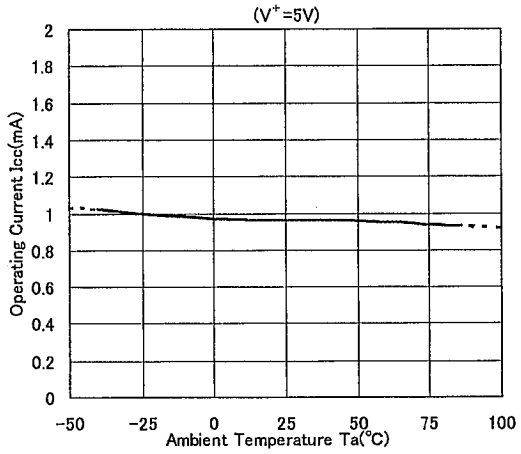
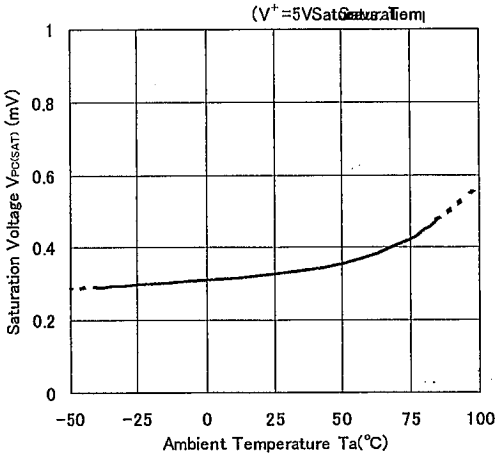
## ■ TYPICAL CHARACTERISTICS

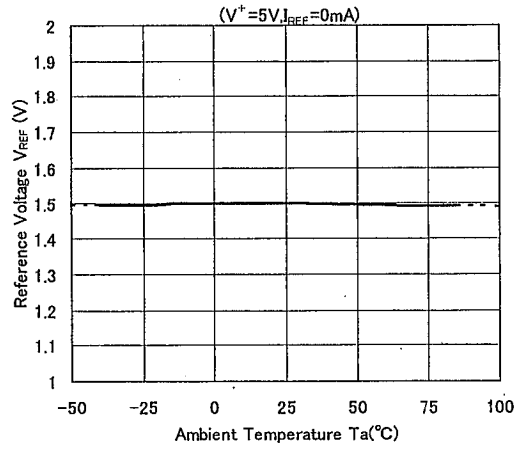
Operating Current vs. Temperature
($V^+$=5V)



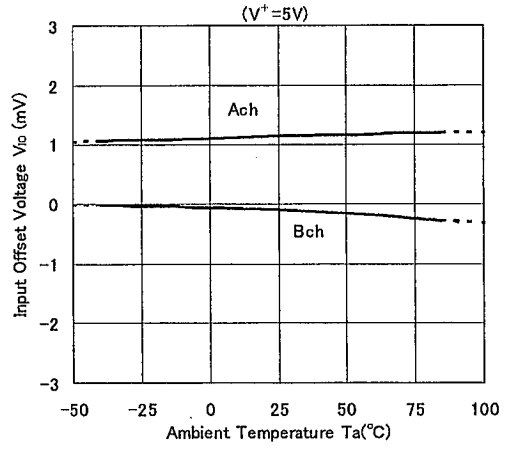

Saturation Voltage vs. Temperature
($V^+$=5V



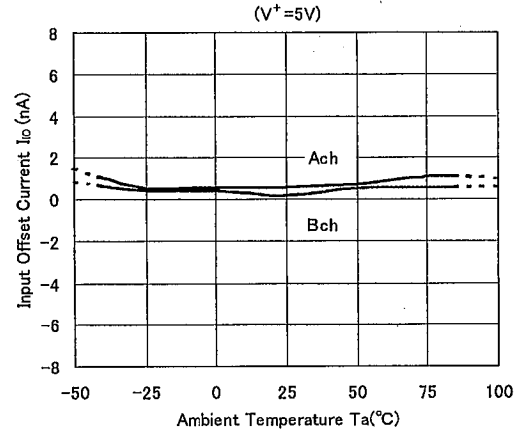

Reference Voltage vs. Temperature
($V^+$=5V, $I_{REF}$=0mA)



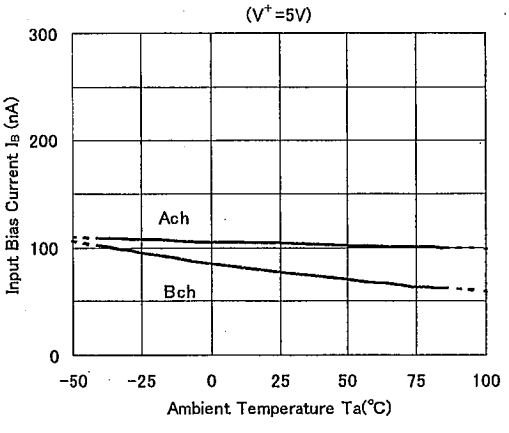

Input Offset Voltage vs. Temperature
($V^+$=5V)




Input Offset Current vs. Temperature
($V^+$=5V)




Input Bias Current vs. Temperature
($V^+$=5V)

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MEMO

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